

REMARKS

This responds to the Office Action mailed on June 20, 2005.

No claims are amended. Claims 1-38 are now pending in this application.

§102 Rejection of the Claims

Claims 1-38 were rejected under 35 USC § 102 as being unpatentable over Lehoczy et al. ("Scheduling periodic and aperiodic tasks using the slack stealing algorithm."). This rejection is respectfully traversed, as the reference does not show each and every element of the invention as claimed.

The work of Lehoczy et al. was referenced in the background section of the present application. It is characterized to being "limited to only a static set of execution threads, i.e. a fixed set of recurring tasks without any new periodic tasks being activated and without any periodic tasks being deactivated. However, actual real-time processing environments typically contain a dynamic set of threads, as certain periodic tasks become active and others become inactive."

Each of the independent claims contain elements referencing activation and inactivation of tasks. The Office Action does not indicate where the reference describes this aspect of the claims, and a review by Applicant fails to find any mention of such activation and deactivation of tasks. Since at least one element of the claimed invention is lacking in the reference, a proper prima facie case of anticipation has not been established and the rejection should be withdrawn. The dependent claims distinguish the reference for at least the same reasons.

Claim 1 includes: "determining available slack for tasks at each priority level, taking into account tasks that are activating and inactivating;"

Claim 10 includes: "determining available slack for tasks at each priority level, taking into account tasks that are activating and inactivating;"

Claim 20 includes: "determining available slack for tasks, taking into account tasks that are activating and inactivating;"

Claim 21 includes: “a first module that is to determine available slack, taking into account aperiodic tasks that are requesting activation and deactivation at unpredictable times; and”.

Claim 29 recites: “determining available slack for processes at each priority level, taking into account processes that are activating and inactivating; and”.

As can be seen, each independent and thus each dependent claim includes references to activation and deactivation. No such discussion is found in the reference, and in fact, the background of the application specifically refers to the work by the author of the cited reference as not dealing with activation and deactivation. As such, the rejection should be withdrawn.

§103 Rejection of the Claims

Claims 1-38 were rejected under 35 USC § 103(a) as being unpatentable over Biliris et al. (US 6,041,354) in view of Turner et al. (US 6,505,229). This rejection is respectfully traversed. The references, alone or combined do not teach or suggest each and every element of the claimed invention. Further, the combination of references is believed improper, as a proper suggestion to combine has not been established.

There is no description in either reference, alone or combined, of how to determine slack, taking into account tasks that are activating and inactivating as claimed in each of the independent claims. Turner et al., is cited as providing teaching of activating and inactivating tasks. However, it does not describe any method of determining slack in the context of such activating and inactivating tasks. Biliris et al., does not address activating and inactivating tasks. Thus, the references, alone or combined, lack teaching describing a claimed element. As such, the rejection should be withdrawn.

Regarding claim 1, the Office Action indicates that real-time harmonic and dynamic tasks are shown in Biliris et al. at Col. 8, lines 13-19 and Col. 3, lines 40-47. While the words, “real time” are used at such lines, there appears to be no concept of harmonic tasks.

The Office Action also indicates that Biliris et al. describes determining available slack for tasks at each priority level in Col. 10, lines 40-48, Col. 11 lines 55-65 and Col. 13, lines 10-17. It does not appear the Biliris et al describes levels of priority, but rather, as seen at Col. 11, lines 64-65, describes checking admission for the highest priority job J' in the disk's wait queue.

Thus, it appears that each job is assigned a priority, and there are not “levels” of priority. No discussion of levels of priority was found in other referenced sections of Biliris et al.

The Office Action indicates that Biliris et al. does not describe determining taking into account that a task is inactivating. However, Turner et al., is referenced as providing such teaching at col. 4, lines 1-6 and col. 8, lines 34-45. Turner et al., while referencing task or thread activation and deactivation does so in the context of a simple resource allocation scheme. It deals with none of the complexities of slack determination and allocation. Even if one were to find a suggestion to combine it with Biliris et al., there is no likelihood of success in making the combination. Slack allocation in the context of the presently claimed invention is a very complex endeavor. One cannot simply pick and choose elements from references and indicate that it would be obvious to combine them.

There is no proper suggestion to combine the references. The Office Action states that “It would have been obvious to one skilled in the art at the time of the invention to combine the teachings of Biliris and Turner to ensure that a task can be activated or deactivated at anytime. By being able to activated or deactivated as task the user can determine and use excess slack thus making the entire system more efficient.” This purported suggestion does not originate from the prior art, as is required for a proper suggestion. It is simply an unsupported assertion of a benefit that can only be seen by using the present application as a roadmap. Further, it does not address the likelihood of succeeding in making the combination.

Any one of the above distinctions are sufficient for establishing that a proper prima facie case of obviousness has not been established. As such, it is respectfully requested that the rejection of claims 1-38 be withdrawn.

CONCLUSION

Applicant submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (612) 373-6911 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

PAMELA A. BINNS

By his Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.

P.O. Box 2938

Minneapolis, MN 55402

(612) 373-6911

Date

September 20, 2005

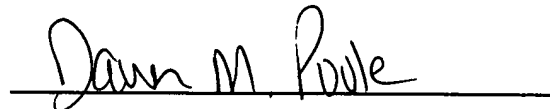
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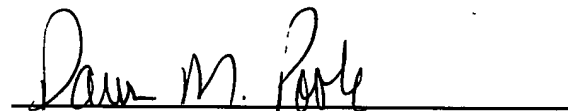
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